

Notice of Allowability

Application No.

10/092,879

Applicant(s)

BARMAN ET AL.

Examiner

Art Unit

Anand Bhatnagar

2623

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 03/08/02.
2. ☒ The allowed claim(s) is/are 1-55.
3. ☒ The drawings filed on 08 March 2002 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

Allowable Subject Matter

1. Claims 1-55 are allowed.
2. The following is a statement of reasons for the indication of allowable subject matter: The closest prior art of Grimson et al. (U.S. patent 5,531,520) and Xiong et al. (U.S. patent 6,754,379) teach to perform image/data registration between multiple image/data sets. Xiong et al. further discloses to perform calibration on the internal and external parameters of the image data in order to perform image registration. Neither Grimson et al. nor Xiong et al. teaches alone nor in combination the features of: Regarding claim 1: "Deriving a transformation between the local coordinate systems and a common coordinate system based upon the locations of the second plurality of calibration features in the first and second local coordinate systems". Regarding claim 6: "Deriving a transformation between the local coordinate systems and a common coordinate system based upon the locations of the plurality of calibration features". Regarding claim 22: "Deriving calibration parameters from the three-dimensional characteristics of the calibration targets relative to the first and second stereo measurement units, the calibration parameters comprising information about a position and orientation of the first stereo measurement units relative to the second stereo measurement unit." Regarding claim 30: "Determine from the second data locations of the second plurality of calibration features in the second local coordinate system; and based on the locations of the second plurality of calibration

features in the first and second local coordinate systems, generate a transformation which, when applied to the second data, expresses locations of object features in a common coordinate system.” Regarding claim 33: “Extract from each of the first and second data calibration information about a plurality of calibration features of one or more calibration objects located in the overlap region; and, based on the calibration information generate a transformation which, when applied to the second data expresses locations of object features in a common coordinate system.” Regarding claim 41: “Derive calibration parameters related to relative positions and orientations of the first and second stereo measurement units, such that image data received from the first and second stereo vision units may be transformed to a common reference coordinate system, using the calibration parameters and, locate features of objects in the first or second stereo measurement field in a common coordinate system using the image data and the calibration parameters.” Regarding claim 44: “Means for locating in the second data the plurality of calibration features; means for determining calibration parameters based on the calibration features located in the first and second data; and means for locating object features relative to a common coordinate system using the calibration parameters.” Regarding claim 50: “Extract from each of the first and second data calibration information about a plurality of calibration features of one or more calibration objects located in the overlap region; and, based on the calibration information, generate a transformation

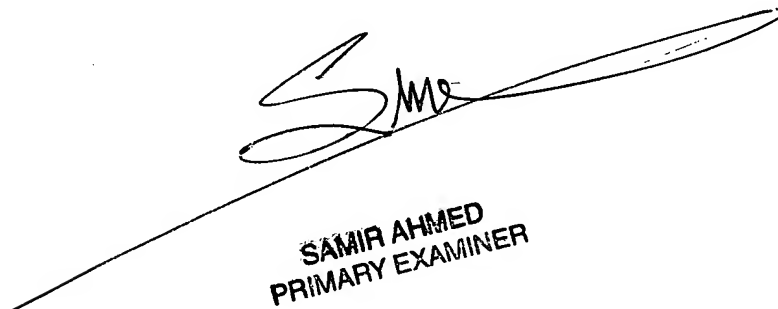
which, when applied to the second data expresses locations of object features in a common coordinate system.” Regarding claim 51: “Locating a plurality of calibration features in each of the first and second image data; determining, from the locations in the first and second data of the calibration features, information characterizing a position and orientation of the second stereo measurement unit relative to the first stereo measurement unit.” Regarding claim 52: “A step for creating a transformation from one or more of the local coordinate systems to a common coordinate system based on the locations of the plurality of calibration features in the first local coordinate system and the locations of the plurality of calibration features in at least one of the one or more additional local coordinate systems.” Regarding claim 53: “Deriving a transformation between the local coordinate systems and a common coordinate system based upon the locations of the first and second pluralities of calibration features.” These respective features for each claim in combination with the other claim limitations of each respective claim.

3. Any comments considered necessary by the applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled “Comments on Statement of Reasons for Allowance”.

Art Unit: 2623

Contact Information

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anand Bhatnagar whose telephone number is (703) 306-5914, whose supervisor is Amelia Au whose number is 703-308-6604, group fax is 703-872-9306, and Tech center 2600 customer service office number is 703-306-0377.



**SAMIR AHMED
PRIMARY EXAMINER**

AB

Anand Bhatnagar

Art Unit 2623

January 23, 2005